

**PUBLIC COMPETITION, WITH QUALIFICATIONS AND INTERVIEW ASSESSMENTS,
FOR THE AWARD OF N. 1 RESEARCH GRANT**

ART. 1

Object

A public competition based on qualifications and interview is open for the assignment of one Research Grant, in accordance to “art. 22, comma 4, letter B” of the Italian law 240/2010 and to the University Regulations for the awarding of research grants issued by Rector’s decree n. 3947, October 12, 2018, as specified below.

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

Research Location: Department of Mathematics and Computer Science (DMI) – Viale Andrea Doria, 6 – University Town – 95123 CATANIA – ITALY

Title of the research: “Asymptotic preserving methods for evolutionary partial differential equations and applications”

Project: **Project PRIN 2017** - code ID 2017KKJP4X_001 – ERC Panels “PE1 – LINEA A” – title: “**Innovative numerical methods for evolutionary partial differential equations and applications**” – CUP E64I17000160001;

Academic Recruitment Field: 01/A5 “Numerical Analysis”

Scientific Field: MAT/08 “Numerical Analysis”

Research activity to be accomplished:

The grant holder will have to deal with the construction, application and analysis of innovative numerical methods for the simulation of problems governed by evolutionary partial differential equations. The types of problems may range from kinetic models of rarefied dynamic gas (monoatomic gases, polyatomic gases and gas mixtures, possibly with chemical reactions), to mathematical modeling for natural phenomena such as lava flows, avalanches and landslides (with Newtonian and non-Newtonian rheology, possibly with the simulation of the phenomenon of ingrottation in the case of lava), from the Schrödinger equation near the semiclassical limit, to the propagation of high frequency waves in media with a slowly variable refractive index, from the equations for mult fluids to the simulation of the diffusion of surfactant in the presence of an air bubble (possibly oscillating). The adopted methodologies, which constitute the main focus of the project, will concern the development of high-order conservative semilagrangian methods for kinetic equations, or high-order methods for the treatment of continuous viscoelastoplastic materials (for the modeling of lava and landslides), or of methods based on the technique called Gauss Waveform Packet Transform (Schrödinger equations and high frequency waves), or of multiscale space-time methods (diffusion of the surfactant). The common denominator of many of the developed schemes is to be Asymptotic Preserving, in the sense that these methods should be able to capture the behavior of the model solutions for a wide range of spatial and temporal scales.

Scientific Director: Prof. Giovanni Russo

Duration of the contract: 1 year (renewable)

ART. 2
Admission requirements

1. Candidates for the position must comply with the following conditions:
 - Ph.D. or equivalent degrees, achieved in Italy or overseas, in disciplines related to the field of Mathematics or Physics or Engineering

Candidates are required to have knowledge of the language: English.

2. The qualifications required as admission requirements, obtained overseas, must normally be recognized in Italy in accordance with the procedure established by current legislation (Article 38 of Legislative Decree 165/2001). Candidates holding academic qualifications obtained overseas that has not already been declared equivalent in accordance with current legislation, or that they are not in possession of a Declaration of Value must attach to the application form the documents necessary to enable the selection board to evaluate their equivalence for the sole purpose of participation in the selection procedure, as specified in the following art. 4, paragraphs 6 and 9.

3. Candidates must not incur one of the causes of incompatibility and/or cumulation provided for in the following article. The selection procedure is not allowed to those who have a degree of consanguinity or affinity, up to the fourth degree, or of a relationship with a professor belonging to the department concerned, who has approved the grant, or with the Rector, with the Director General or with a component of the Board of Directors of University of Catania.

4. Candidates are admitted with reserve to the selection. The Administration may, at any time, with due provision, exclude candidates from the public selections due to lack of requirements.

5. The above requirements must be held on the date of expiry of the deadline for the submission of the application.

ART. 3
Incompatibility and prohibition of overlapping

1. The research grant cannot be compatible with enrollment in undergraduate or master courses nor PhD with scholarship or medical specialization in Italy or abroad.

2. The research grant is likewise incompatible with the enrolment to other schools or courses that require compulsory attendance, unless otherwise reasoned opinion of the professor in charge of the project, and of the Board of the concerned Department.

3. Financial contributions resulting from scholarships awarded for any purpose are not compatible with the research grant. Exceptions are scholarship awarded by national or foreign institutions with the aim to integrate the research work through stays abroad involving the recruited candidate.

4. Those who are part of the permanent staff of Universities, Institutions and public bodies of research and experimentation, of ENEA and ASI, as well as of the institutions where the degree of scientific specialization has been recognized as equivalent to the title of PhD, pursuant to art. 74, paragraph 4, D.P.R. n. 382 of July 11, 1980, cannot be holders of research grants.

5. Staff working in public administrations other than those indicated in the previous point, in order to use the research grant, must be placed on leave of absence for the entire duration of the research collaboration, starting from the start date of the activities.

6. The research grant is also incompatible with employment contracts with private entities with other cooperation agreements and other free-lance, conducted continuously.

7. Pursuant to art. 22, paragraph 9, of Law 240/2010, research grants cannot be awarded to those who have used contracts for research grants entered into with other Universities and / or with the institutions referred to in paragraph 4 of this article, whose total duration, together with the duration of the contract referred to in this announcement, exceeds twelve years, even non-continuous. For the purposes of the duration of the aforementioned reports, the periods spent on maternity leave or for health reasons are not considered.

ART. 4

How to apply

1. Applications, written on plain paper using the form (*Annex 1*), must be addressed directly to the Rector of the University of Catania, Department of Mathematics and Computer Science (DMI), and sent by express courier, within a deadline of 20 days from the day after publication of this notice on the website of the University of Catania (<http://ws1.unict.it/albo/>). It must be, **alternatively**:

- sent by registered post with acknowledgment of receipt to the following address:
Department of Mathematics and Computer Science (DMI) - Viale Andrea Doria, n. 6, 95123, Catania;
- delivered by hand to the same address referred in the previous point, from Monday to Friday (09:00 until 13:00 A.M.).

2. On the envelope containing the application for admission, publications and anything else provided, the following information shall be reported:

- a) the candidate's personal details;
- b) the address chosen for the purposes of the competition;
- c) the following wording: **“Department of Mathematics and Computer Science (DMI)”, Research grant, call for application number ...1.5.75...../2020 – Academic Recruitment Field: 01/A5 “Numerical Analysis”, Scientific Field: MAT/08 “Numerical Analysis” - Scientific Director: Prof. Giovanni Russo.**

3. Applications sent by registered mail with acknowledgment of receipt are considered submitted in time if sent within the deadline indicated above. For this purpose, the shipping date is established and proven by the post office acceptance date stamp. For applications submitted directly at the offices of the Department considered, the delivery date is certified by the reception staff who will provide the protocol number.

4. Applications that are sent or submitted after the aforementioned deadline or that, due to the lack of indication on the envelope of all the information required in point 2 have been lost, will not be considered. The Administration, moreover, assumes no responsibility for the dispersion of communications due to inaccurate delivery indications by the competitor or by failure or late communication of the change in the address indicated in the application, nor for any postal errors or however imputable to third parties, fortuitous or force majeure.

5. In the application, besides indicating the precise name of the Academic Recruitment Field, of the Scientific Field, of the title of the research and of the Department concerned, the applicant must declare, according to D.P.R. n. 445/2000, as amended, and under his/her responsibility:

- a) his/her full name, date and place of birth, tax identification number, place of residence, place of domicile as chosen address for correspondence for the purposes of this selection, telephone number, email address and video conferencing address;
- b) citizenship;
- c) possession of the academic title required for admission, with indication of the date of attainment, of the score reported (if provided) and of the University where it was obtained, or the equivalent qualification obtained at a foreign university. (*If the foreign qualification has not already been declared equivalent, the candidate must present the Declaration of Value issued by the Italian diplomatic authorities responsible for the territory, or, forward a simultaneous request for equivalence assessment, attaching the relevant documentation with the procedures referred to the following point 9. In this case the aforementioned title will be evaluated by the commission only for the purposes of the selection procedure*).
- d) the research grant (s) he / she was previously holder;
- e) any academic and professional qualifications held (specialization diplomas and certificates of attendance at post-graduate specialization courses, obtained in Italy or abroad, conducting research activities in public or private institutions with contracts, scholarships or appointments, both in Italy and abroad, etc.) produced according to the paragraph 9 below;
- f) not to incur the cumulative prohibitions and incompatibilities provided by art. 3 of this announcement;
- g) that he/she is not in a relationship of consanguinity or affinity, up to the fourth degree inclusive, or with any professor of the Department which approved the research program, with the Rector, with conjugacy the Director General or with a member of the Directors Board;
- h) to be/not to be employed by a public administration pursuant to art. 3, paragraph 4, of this announcement;
- i) to promptly communicate any change in their situation in relation to statements made in previous letters as well as the residence or contact details.

6. Candidates with a foreign qualification that has not yet been recognized as equivalent or for which the certification of value has not yet been issued by the Italian diplomatic authorities must follow the application for assessment of equivalence of the degree.

7. Disabled candidates may request the necessary assistance in relation to their disability as well as the possible need for compensatory measures for the completion of the interview, to be documented by means of an appropriate certificate issued by the public health organization responsible for the territory, pursuant to Italian Law 104/1992 and subsequent amendments and additions.

8. The application must include:

- a) the scientific-professional *curriculum*, dated and signed;
- b) the qualifications, including those required for admission, professional qualifications and the publications that the candidate considers to submit to the evaluation;
- c) the publications referred in the point b) above, possibly in electronic form, or photocopy of the same together with a special declaration, the notarial deed, pursuant to 47, D.P.R. 445/2000, certifying the compliance with the original;
- d) the list of documents presented;
- e) a photocopy of an identification document;

9. The qualifications and professional documents referred to the lett. b) of the previous point, may be certified according to one of the following methods:

1. In the original;
2. In authentic copy;
3. In photocopy, with attached a special declaration, the notarial deed, pursuant to art. 47 of Presidential Decrees 445/2000 that certifies its conformity to the original, together with a valid one identity document (*Annex 2*);
4. by a declaration signed by the candidate substitute for certification pursuant to art. 46 of the Presidential Decrees 445/2000 (*Annex 3*).

The educational and professional qualifications issued by Italian public administrations may be self-certified, taking care to specify in an analytical and precise manner each useful element for the purpose of evaluating the qualifications and carrying out the necessary checks on the veracity of self-certified data (e.g. date, organizer / client, duration, exams, type of contract, etc.); or presented in a simple photocopy by a declaration in lieu of certification and / or deed of notoriety.

Pursuant to art. 40, paragraph 1, D.P.R. 445/2000; no certificate must be attached to the application for admission, in the original or in certified copy issued by an Italian public administration.

Only professional qualifications obtained in Italy and issued by private individuals may be produced in original, in certified copy or in copy declared conform to the original.

Qualifications obtained abroad (university degree, doctorate or equivalent qualification, graduate school diploma, etc.) must normally be recognized in Italy in accordance with the procedure established by current legislation (Article 38 of Legislative Decrees 165/2001). In the absence of the ministerial recognition of the title, the Declaration of Value issued by the Italian diplomatic authorities competent for the territory must be produced. In the absence of such documentation, the titles can be attested in the manner indicated in points 1, 2 and 3 above; the attestation must be attached by a legalized Italian translation. Professional qualifications obtained abroad may be produced in the manner referred to in points 1, 2 and 3 above, must be attached by an Italian translation.

The professional titles obtained abroad can be produced in the manner described in points 1, 2 and 3 above, must be accompanied by an Italian translation accompanied by a declaration of conformity of the translation with the original text, if the candidates are not in possession of a legalized translation.

10. Failure to comply with the formalities required to certify the possession of the qualification entails exclusion in case that the qualification is an “admission requirement”, for the other qualifications and professional qualifications the impossibility of being able to be object of rating. In application of the self-certification rules, the University will check the veracity of the substitutive declarations and self-certifications given by the candidate.

The university administration has the right to request additions and clarifications to the candidate and / or public administrations, pursuant to art. 6 of Law 241/1990 and subsequent amendments and additions.

11. Cumulative applications for multiple selections are not allowed. It is not necessary to refer to documents and publications already presented at the University of Catania.

12. On pain of exclusion, the application must be signed by the candidate and attached with a photostatic photocopy of a valid identification document; the candidates whose applications do not contain all the declarations required for the admission from the present announcement are also excluded.

ART. 5

Selection Commission

The candidates are examined by a Selection Commission (hereinafter the Commission), specifically appointed by the Director of the Department of Mathematics and Computer Science (DMI) on the designation of the Board of the same Department, composed of three professors of the competition academic recruitment field or of the scientific field, with a scientific interest and research topic correlated the project or program of the research program.

In the case of research grants co-financed by public Entity (INFN, INFN, CNR, etc.), the selection boards, in addition to the researchers referred to in the previous paragraph, can be a permanent employee of the Entity, belonging to a qualification for access to which the degree is required.

The Commission performs the comparative assessment of candidates on the based of the curricula, the qualifications presented and an interview to evaluate the specific skills required.

In compliance with the D.P.C.M. on April 26, 2020 and the order of the General Director of University ref. No. 261648 on May 5, 2020, Commission's activities will be carried out exclusively in video conference.

The Commission is required to complete its work within 60 days of the notification of the appointment decision.

ART. 6

Evaluation of qualifications and interview

1. The Commission will carry out the comparative assessment of candidates on the based of the curricula, the qualifications presented and an interview to assess the specific competences required, ensuring the publicity of the documents.

The Commission preliminarily determines the evaluation criteria of the candidates, having a maximum score of **100** points, according to the following:

Evaluation of qualifications and publications

a) qualifications (including the PhD and / or, for the sectors considered, the diploma of specialization in the medical area, or equivalent recognized qualification, obtained in Italy or abroad, **only if it is not an admission requirement**) up to a maximum of 6 points

b) attendance to PhD courses, specialized courses, post-graduate courses, followed in Italy or abroad; carrying out a documented research activity in public or private subjects with contracts, scholarships or appointments, both in Italy and abroad, to be attributed also to those who have already obtained the relative title **only if it is not an admission requirement** up to 3 points for each year and in any case up to a maximum of 9 points

c) Publications up to a maximum of 20 points

Interview

up to a maximum of 65 points

The interview is aimed to validate the candidate's ability in relation to the research program referred to in art. 1, as well as knowledge of the English language.

2. The interview will take place exclusively in “remote” mode using the audio and video teleconferencing tool. At regard, the Commission will adopt technical-operational methods that allow the interview examination of candidates to be carried out in public form, thus allowing remote access to viewing and listening to the session by third parties. At the beginning of the online interview, for identification purposes, candidates must show the same identification document sent along with the application form.

The lack of network connection at the time established or a delay in connection will be considered as a waiver of participation in the selection.

3. The results of the evaluation of qualifications and publications are known before the interview by publishing the relevant educational structure to the department interested, with the value of notification to all interested parties. The candidates not admitted to the interview are not further notified.

At least 20 days before the start of the interview, the offices of the department concerned will communicate to the candidates admitted, by e-mail, the day, time and video conferencing address to which to connect for the interview.

Any further information about the date, time and video conferencing address for the “remote” interview will be published on the website of the Department of Mathematics and Computer Science (DMI) in the “NOTIZIE” section at the following link “<http://web.dmi.unict.it/>”.

4. Failure to be present to the interview will be considered as a waiver of the selection, whatever the cause.

5. At the end of the session dedicated to the interview, the Commission forms the list of candidates examined, with an indication of each vote obtained. This list is published on the website of the Department concerned.

6. The documents of the examining commission are constituted by the documents of the single meetings.

ART. 7

Formulation and approval of the merit ranking list

1. At the end of the selection procedure, the Commission of selection draws a document containing a detailed report of the proceedings, the assessments of the qualifications, the *curriculum vitae* and the assessment of the interview sustained by each candidate, as well as the reasons for possible exclusions from the selection. The Commission formulates the list of candidates considered suitable and who have achieved a total score of at least **55** points.

2. The merit ranking is formed in descending order, according to the overall scores reported by each candidate. With the same merit the candidate with a minor age is preferred.

3. The Administration, with a rectoral decree, having confirmed the regularity of the procedure, issues the final ranking list that will be published online, on the official Register of the University of Catania, available on the University website at <http://ws1.unict.it/albo/>, as well as in the dedicated section “*Calls and competitions*”.

The electronic publication on the Official Notice Board has the value of notification to all intents and purposes; from the date of such publication, the terms for the lodging of appeals start to run.

4. Placement in the merit ranking, as a suitable candidate, does not constitute a qualification for subsequent selective calls opened by the University Regulations for the awarding of research grants.

5. The list is valid for 120 days from the date of the rectoral decree issued by the same. Within the aforementioned term, the research grant can be awarded to the candidate who is eligible according to the ranking order, in the case of renunciation of the researcher or for non-acceptance within the established period.

ART. 8

Contract stipulation

1. The signing of the contract with the awardee of the selection is subject to the verification of possession of the requirements prescribed for admission to the selection and of the other cultural and professional qualifications declared/presented.

The Administration carries out appropriate verifications before the conclusion of the contract and throughout its duration, including any renewals, as well as to request further documentation regarding the continuation of the conditions of compatibility and absence of cumulation arranged in the previous art. 3. If these controls reveal the non-veracity of the content of the declarations or the non-fulfillment of the requirements for the assignment of the grant, will lose the benefits related to the rectoral provision issued will result or the contract will be declared terminated by right.

2. The highest ranked candidate who, without justified reason, does not appear for the signing of the contract within the terms communicated by the university administration, will lose the right to the research grant; in this case, the administration is entitled to assign the grant to another candidate, according to the descending order of the ranking.

3. The contract, signed by the Director General or his delegate, regulates the activity of research collaboration and must contain, in addition to the indication of the name of the scientific director, among other details:

- the title of the research, the title of the research program, the competition academic recruitment field and the related scientific field;
- the description of the research activity to be carried out;
- the duration of the contract and the possibility of renewal;
- the total amount of the research grant and the method of delivery;
- the methods of monitoring and evaluating the activity carried out.

4. Any variation of the start date are allowed only for documented reasons of health, pregnancy, and possible delays in obtaining the necessary authorizations from non-EU citizens. In such hypotheses, the administration, after hearing the scientific director, will define the start time.

5. For the entire duration of the contract to research grant is to consider the application of art. 3 of this announcement.

6. The researcher may carry out a limited activity of self-employment or occasional collaboration with persons outside the University, subject to the authorization of the scientific director, provided that this activity is declared, by the structure where it operates, compatible with the research activity to which the same is required and does not involve a conflict of interest with the specific activity carried out and prejudice to other research activities of the structure and to the University.

7. The researcher may also perform teaching assignments at the University of Catania in accordance with the Regulations for *assignments and contracts for educational needs, also supplementary, pursuant to Law 240/2010*, as well as a teaching activity in a) supplementary and support; b) tutoring; in accordance with the University regulations, within the limits and with the methods established therein, and always on condition of compatibility with the research activity carried out by the researcher without conflicts of interest.

8. The researcher begins to carry out the research collaboration activity, as a rule, from the date of signing the contract.
9. The contract does not constitute a subordinate employment relationship and ensures any rights to access to staff positions at the University of Catania.
10. The forfeiture of the research grant is arranged by the Rector's Decrees.

ART. 9

Duration, suspension, interruption, renewal and withdrawal of the contract

1. The contract of the research grant has a duration of one year (renewable).
2. During the period of validity of the contract, the activity may be suspended for serious illness or serious family reasons, or for abstention linked to parental leave. The periods of suspension, with the exception of the mandatory maternity leave, can be recovered at the end of the natural expiration of the contract, if properly documented and prior authorization from the scientific director, in any case in compliance with the limitations and terms that may be imposed by the available funding. It does not constitute suspension and, consequently, a total absence period of no more than thirty non-consecutive working days must not be recovered.
3. Pursuant to art. 10, paragraph 2, of the aforementioned University regulations, the interruption can not exceed three months, under penalty of termination of contract law.
4. The Administration is entitled to renew the contract exclusively for the continuation of the project or research program in which the grant was awarded. The renewal is subject to confirmation by the Council of the department concerned of the need for the continuation of the research activity and the financial coverage for the renewal.
The allowance can be renewed for a minimum duration of one year; for justified needs, the minimum duration of the last renewal may be half-yearly.
The renewal is ordered by the rector's decrees, within the expiration of the contract in progress, subject to verification of the maintenance by the researcher of the requisites established by the regulations and by the University regulations on the matter.
In case of renewal the art. 22 of law 240/2010, as amended by art. 6, paragraph 2 bis, of the D.L. 192/2014, converted from L. 11/2015, as well as the specific provisions of the University Regulations for the awarding of research grants, to which reference should be made.
5. The researcher may withdraw from the contract giving at least 30 days' notice.
In the event of failure to give notice, the Administration shall retain the amount due to the remuneration due for the period of notice not given.

ART. 10

Emoluments, tax and social security treatment, insurance coverage

1. The annual amount of the grant is set at € 19367, net salary including charges to be paid by the administration. The aforementioned amount will be given to the beneficiary in monthly installments.
2. Research grants apply in the areas of tax, social security and compulsory leave for maternity, the provisions referred to in art. 22, paragraph 6, of the law 240/2010.

3. The University of Catania provides insurance coverage against accidents and civil liability.

ART. 11

Evaluation of research activity

1. The granting involves carrying out the research activity described in the contract and it is possible to the structures and equipment of the reference structure.
2. The research activity can be carried out partly at external facilities, only after expressing it authorization of the referent teacher.
3. At the conclusion of the contract, the researcher is required to present a report on the activities carried out and on the results achieved.

ART. 12

Termination of the contractual relationship

1. The contractual relationship established between the University and the researcher is finished, without obligation notice in the following cases:
 - a) unjustified failure to start the research activity;
 - b) violation of the incompatibility regime provided for by the current regulation concerning the granting for the conduct of research activities;
 - c) unjustified interruption of the research activity for a period exceeding three months.

ART. 13

Return of documentation

1. Candidates, if interested, will have to provide, at their own expense, for the withdrawal of titles and publications after three months of the publication of the merit ranking.
2. After six months from the date of publication of the list of merit, the University cannot be held responsible in any way for the custody of documentation (titles and publications) presented by the candidates.

ART. 14

Responsible for the administrative procedure

1. According to the Law n. 241/1990, art. 5, and subsequent modifications and additions, the person in charge of the selection procedure referred to in this announcement is Lucio Mannino - Research Office - Via Fragalà, n. 10 - 95131 Catania – email: ac.ari@unict.it - (telephone 095 4787406).

ART. 15

Personal data processing

1. The personal data contained in the applications for participation of the selection, pursuant to art. 11 of Legislative Decrees 196/2003 (“Code regarding the protection of personal data”), are processed exclusively for the purposes of managing this announcement. The provision of such data is mandatory for the assessment of participation requirements, under penalty of exclusion from the selection. Interested parties, at any time, may consider the art. 7 of the aforementioned Legislative Decrees, including the right of access to data concerning him and the right to have rectification, updating, completion or deletion of incorrect, incomplete or collected data in terms that do not comply with the law.

ART. 16

Referral procedures and publication

1. This announcement and all related documents will be made public via a publication on the official University Notice Board, available on the University website: www.unict.it. Further publication of the announcement is made on the official website of the MIUR and the European Union.
2. For any matters not provided in the present call for applications, the provisions of the current legislation on the subject and the Regulations for the awarding of research grants.
3. The competent court of appeal is the Regional Administrative Court - Sec. of Catania.